

REMARKS

Claims 1, 3, 5 and 7-34 are pending in this application. The Office Action rejects claims 1, 3, 5, 7-12 and 25-34 under 35 U.S.C. §103(a) as unpatentable over Isao in view of Angelopoulos, Miyamura and Mitsui. Applicants respectfully traverse the rejection.

Applicants thank Examiner Rosasco for the courtesies extended to Applicant's representative during the personal interview conducted on July 30, 2007. Applicant's separate record of the substance of the personal interview is contained in the following remarks.

I. Rejection Under 35 U.S.C. §103(a)

The Office Action rejects claims 1, 3, 5, 7-12 and 25-34 under 35 U.S.C. §103(a) as unpatentable over Isao in view of Angelopoulos, Miyamura and Mitsui. Applicants hereby amend instant claims 1 and 9, from which all other claims depend, and respectfully traverse the rejection. No new matter is added.

Instant claims 1 and 9 are directed to two or more phase shift films having different compositions, respectively, wherein a composition ratio of metal and silicon in each film is changed by adjusting discharge powers applied to each target, and targets used for forming any one of the layers of the phase shift films are continuously discharged without shutdown even when the other layers of the phase shift films are formed. Accordingly, all of the targets to be used are simultaneously discharged during the formation of films no matter which layer is formed. This feature results in fewer defects in the phase shift films.

As outlined on page 52, paragraph 2 of the present specification, when repetitive starting and stopping of target discharge occurs, discharge becomes unstable, and defects are generated in the phase shift films. Accordingly, instant claims 1 and 9 are directed to targets used for forming a layer of phase shift films that are continuously discharged even as the other layers of the phase shift films are formed. Thus, discharge instability upon starting and finishing sputtering film formation never occurs, and attachment of the components for film

formation generated from a discharged target to an undischarged target can be prevented. Further, in conjunction, each layer of the phase shift films contains 1-10% of the compositions of adjacent layers. See the specification at page 53. Hence, since each target is discharged without a shutdown, i.e., stably discharged when each layer of the phase shift films are formed, the number of defects in the phase shift films is decreased.

In contrast, Isao describes a multilayer film of a MoSiON type. However, as shown in column 11, paragraph 1 and Fig. 6 of Isao, reactive gas flow ratio is varied among films, and the composition ratio of silicon and metal remains unchanged. In Isao, the ratio of oxygen and nitrogen changes through the change in reactive gas flow ratio, yet the composition ratio of silicon and metal remains unchanged. Because the ratio of silicon and metal remains unchanged, the discharge powers supplied to the targets cannot be changed when each film is formed. Thus, Isao is clearly distinct from the features of claims 1 and 9, and all claims depending therefrom.

Angelopoulos and Mitsui relate to a monolayer film, as described in the Office Action. However, since they relate to a monolayer film, they are non-analogous to the claimed invention. Moreover, although Angelopoulos teaches that a film composition can be changed through a change in discharge powers supplied to plural targets, its teaching only means that a composition of a monolayer film can be changed. Angelopoulos nowhere discloses that film composition can be varied with each layer of a multilayer film. Additionally, as described above, Isao does not change discharge powers supplied to targets on forming each layer. Thus, Isao could not have been combined with Angelopoulos, which changes a film composition of a monolayer film by changing discharge powers supplied to plural targets, and, even if combined, they would not have obtained the claimed features.

Miyamura relates to a multilayer film in which different kinds of metals are alternately formed in multiple layers, as described in its claims and Examples. Therefore, Miyamura

inevitably needs plural targets. However, the targets in Miyamura need to be alternately discharged so that different kinds of metals can be alternately formed. In Miyamura, some targets have to stop being discharged when each layer is formed. Therefore, Miyamura is completely different from the subject matter of instant claims 1 and 9, which relate to simultaneously and continuously discharging all of the targets when each layer is formed. Moreover, because Miyamura stops discharging targets in midstream, Miyamura results in more defects generated in the film.

Thus, instant claims 1 and 9, and all claims depending therefrom, are directed toward a composition ratio of metal and silicon in each film that is changed by adjusting discharge powers applied to each target, and targets that are simultaneously discharged when each layer is formed and without shutdown, thus resulting in decreased defects in the film. This combination of features is nowhere taught or suggested by any combination of Isao, Angelopoulos, Miyamura or Mitsui. Moreover, no combination of Isao, Angelopoulos, Miyamura or Mitsui would have rendered obvious the features of instant claims 1 and 9, from which all claims depend, because no combination obtains the claimed features.

For at least the foregoing reasons, instant claims 1 and 9, and all claims depending therefrom would not have been unpatentable over any combination of Isao in view of Angelopoulos, Miyamura and Mitsui. Reconsideration and withdraw of the rejection are earnestly solicited.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 3, 5 and 7-34 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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